

Introduction to WGS in AMR surveillance – Day 1

Course offered by SEQAFRICA



15 February 2021

Pernille Nilsson

Virtual Housekeeping



Please **turn off your cameras and microphones** – this will help with bandwidth and maximise audibility.



Do frequently **use Slack** to share comments and ask questions. Keep the chat constructive, respectful and on topic!



For Q&A's **use Slack to submit your questions!** Please upvote (give a thumbs-up) to the questions that you like.




The session is being **recorded for distribution to participants** as a post course resource as well as for future iterations of the course.

Agenda


Monday 15th February 09:00 – 12:15



Lectures



Exercises



SurveyMonkey

Day 1: Monday – 15 Feb 2021 – Why and how to bring WGS into AMR

Join Zoom for Day 1

Time (CET)	Content/Activity	Lecturer / Facilitator
08.45 – 09.00	Joining the call – Assistance will be provided at this time to help participants join	
09.00 – 09.15	Welcome and Introduction (Live)	Rene S. Hendriksen/Pernille Nilsson (DTU, Denmark)
09.15 – 09.45	 [1] The present and future in AMR surveillance: The potential of using WGS in AMR surveillance (Pre-recorded Lecture)	Rene S. Hendriksen (DTU, Denmark)
09.45 – 10.00	BREAK	
10.00 – 10.30	 [2] Application of WGS in public health microbiology: Genomic epidemiology of the Haitian Cholera outbreak. (Pre-recorded Lecture)	Rene S. Hendriksen (DTU, Denmark)
10.30 – 11.00	 [3] Taking epidemiology into account –what to sequence and how much? (Pre-recorded Lecture) <i>Note: Attendants are encouraged to review the treatment guidelines for syndromes/pathogens or organisms in their country (to know what data will help clinicians and public health people in their country or region)</i>	Alessandro Foddai (DTU, Denmark)
11.00 – 11.30	BREAK	
11.30 – 12.00	 [4] Overview of terminology and different sequencing platforms: Illumina, Ion Torrent, Pacific Biosciences (PacBio), Oxford Nanopore Technologies (Pre-recorded Lecture)	Jette Sejer Kjeldgaard (DTU, Denmark)
12.00 – 12.15	Q&A and Wrap-up (Live)	

SEQAFRICA – Extending whole genome sequencing capacity for AMR Surveillance

- Led by the Research Group for Global Capacity Building at the National Food Institute (DTU Food).
- Established and currently support a consortium of **regional** and **national** sequencing centres
 1. **Nigeria, University of Ibadan (UI)**
 2. **Tanzania, Kilimanjaro Clinical Research Institute (KCRI)**
 3. **South Africa, National Institute for Communicable Diseases (NICD)**
 4. **Ghana, Noguchi Memorial Institute for Medical Research (NMIMR)**
 5. **South Africa, NICD, SARS-CoV-2**




Bringing WGS into AMR surveillance

- Develop and support WGS and bioinformatics capacity for AMR surveillance across Africa
- Sequencing efforts are focused on several key pathogens
 - E.g. *Streptococcus pneumoniae*, *E. coli*, *Salmonella spp.*, *Klebsiella pneumoniae*
 - Contemporary (and archived isolates)
 - Sequence goal of 14.000 genomes
- Contribute to the global pandemic surveillance efforts of SARS-CoV-2

Resources we provide

- **WGS and data analysis services to the African region**
- Support investigation of
 - Genomic surveillance
 - Outbreaks
 - Unusual resistance phenotypes
 - Delineation of the flow of organisms/genes in a One Health framework

To be filled in by the reference centre	Date for reception		
Name of recipient	Placed for storage		

How to do:

1. Please fill in the form and send it by email to [\[state email\]](#) for approval
2. When the form has been signed and approved by the reference centre, you can send your isolate together with this delivery note.

Project description for WGS samples to reference centre

Information about the sender	
Institution/laboratory	Name:
	Address:
Contact person	Name:
	Phone number:
	Email:
Information about the isolate or isolate set	
What is the purpose of sequencing the isolate(s)? What question do you expect to be answered by the sequencing and analysis?	
Please give a short description of the project/program to which the isolates belong.	
With which public health institute(s) are the isolates associated or should the data be shared with?	
Are other institutes/stakeholders involved in the project? If yes, list the institutes and the contact persons.	

Please forward this hard copy with the isolates, and forward an electronic version by email to [\[state email-address\]](#). The work will not start until all relevant information has been given.

[1] The present and future in AMR surveillance

Rene Hendriksen (DTU)





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BREAK

(short)



[2] Applications of WGS in public health microbiology

Rene Hendriksen (DTU, Denmark)



[3] Taking epidemiology into account – what to sequence and how much?

Alessandro Foddai (DTU, Denmark)





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BREAK



[4] Overview of terminology and different sequencing platforms

Jette Sejer Kjeldgaard (DTU, Denmark)





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Q&A



Agenda

Wednesday 17th February 09:00 – 11:45



Day 2: Wednesday – 17 Feb 2021 – Quality control and identification/characterization		
Join Zoom for Day 2		
08.45 – 09.00	Joining the call – Assistance will be provided at this time to help participants join	
09.00 – 09.15	Welcome and Introduction (Live)	
09.15 – 09.45	[5] Basic quality control of raw reads (Pre-recorded Lecture)	Mushal Allam (NICD, South Africa)
09.45 – 10.15	[5E] Exercise: Basic quality control of raw reads using FastQC. A tutorial where you learn how to import, view and check the quality of a sequenced data using FastQC. (Live introduction) Note: You will perform the exercise on your own computer and submit replies through this SurveyMonkey link .	Mushal Allam (NICD, South Africa)
10.15 – 10.30	BREAK	
10.30 – 11.30	[6] Bioinformatics Basics: General introduction to bioinformatics and introducing genome assembly. What components/features of bacteria are used in genomic identification of species? (Pre-recorded Lecture)	Marco van Zwetselaar (KCRI, Tanzania)
11.30 – 11.45	Q&A and Wrap-up (Live)	

Contact us for more information



seqafrica@food.dtu.dk



pnil@food.dtu.dk

(Pernille Nilsson, Project Manager)



rshe@food.dtu.dk

(Rene S. Hendriksen, Technical Lead)



antimicrobialresistance.dk/seqafrica.aspx



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Thank you



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This programme is being funded by the UK Department of Health and Social Care.
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